WOUND IRRIGATION AND DEBRIDING SYSTEM

FIELD OF THE INVENTION

This invention relates to medical apparatus for the irrigation and debriding of wounds and incisions and more particularly to a device in which a unit dose of sterile (USP) saline solution or a sterile water solution is dispensed for the irrigation and cleansing of a wound or incision.

BACKGROUND OF THE INVENTION

The accepted, long standing, current method of wound irrigation delivery systems is comprised of the following independently packaged items: a sealed sterilized bottle of saline solution, a sterile (e.g. 16oz.) bowl, and a sterile syringe. The accepted procedure involves opening all items, placing them onto a sterile field, unsealing the bottle of saline solution, pouring it into the now-opened bowl and then draw it up into the syringe. The system is now ready to irrigate the wound or incision. The two major drawbacks to the current system are as follows. The first drawback is the precious time that is lost, especially in an emergency, to unpack and assemble this system for use. The second, and most critical drawback, is the immediate exposure of all of these items to local contaminates. Once the seal on the bottle of saline solution is broken, the solution is now subject to contamination. This is even more so when the solution is poured into the now-exposed bowl. The already exposed solution is then drawn into the sterile syringe. The entire wound irrigation system is thus potentially contaminated. The sterile field on which this operation is performed is a sterilized, prepackaged sheet of paper that is removed from its protective packaging, unfolded and placed upon whatever surface the attending person is using for the procedure. If this surface becomes wet, it is then considered contaminated and rendered ineffective. The surface could be in a hospital operating or emergency room, a school nurse's office, an accident site, or a military field hospital. All are areas that could easily contaminate the exposed, current wound irrigation systems. An example of this contamination could be Staff Infection, which is easily spread, especially in hospital environments.

Although the current medical procedure has been in continuous use for quite some time, it would nevertheless, be extremely useful, if a suitable wound irrigation/debriding device could be provided which would avoid possible contamination of the irrigation solution.

It is, therefore, an object of the present invention to provide a quick, efficient and totally safe wound irrigation and debriding delivery system.

Another object of this invention is to provide a one-piece system, which can be pre-sterilized and easily stored in a ready-to-use condition to provide quick, safe and effective treatment when needed.

It is yet another object of this invention to provide a quick, easy-to-use, self-contained device which saves substantial time and expense.

It is yet another object of this invention to eliminate the Sharps Biohazard Waste associated with the prior art wound irrigation systems. These current systems employ the use of a needless syringe. This syringe must be discarded into a Sharps Hazard Container, at considerable cost to the facility. The present invention eliminates all Sharps Hazards in the wound irrigation process.

SUMMARY OF THE INVENTION

An improved NON-INVASIVE medical procedure and apparatus has been discovered for the irrigation of wounds and incisions which is not prone to the contamination dangers of prior-art systems. The invention consists of the irrigation solution chamber, a nozzle, a NON INVASIVE nozzle protective tip with a removable packaging band around it for additional protection during storage and moving and an optional filter. In one embodiment, the nozzle assembly is screwed onto the solution chamber at point of manufacture,, In another embodiment, the nozzle and solution chamber are molded into one unit during the manufacturing process. The entire device is made of a flexible material, preferably plastic. All separate items, of each embodiment, are assembled into one unit, sterilized, and packaged at the point of manufacture and shipped ready to use. Preferred quantities and type of irrigation solution are 120-200 cc of USP saline solution or of distilled water.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects of the present invention and the various features and details of the operation and construction thereof are hereinafter more fully set forth with reference to the accompanying drawings, where:

Fig. 1 is a perspective view of the complete assembly with a nozzle.

Fig. 2 is a perspective view of the solution chamber used with a screw-on nozzle.

Fig. 3 is a perspective view of a straight screw-on nozzle.

Fig. 4 is a perspective view of an angled screw-on nozzle.

Fig. 5 is a perspective view of an optional filter.

Fig. 6 is a perspective view of a molded assembly.

DETAILED DESCRIPTION OF THE INVENTION

The preferred embodiment of the invention, as shown in Fig. 1, comprises solution chamber 10 containing sterile irrigation solution 11; chamber 10 being affixed to and opening into delivery nozzle 14, which contains optional filter 15; the delivery end of said nozzle 14 having protective tip 13 around which is wrapped packaging band 12. Nozzle 14 may be configured (Fig. 3) to screw onto solution chamber 10 (Fig. 2) or it may be molded as one piece to the solution chamber (Fig. 6). Both configurations are assembled at point of manufacture into a single-piece, disposable, sterile unit.

Although the nozzles shown in Figs. 1 and 3 are straight, they may also be fabricated with varying degrees of angles as shown, for example, in Fig. 4. A typical (optional) filter 15 for the unit is shown in Fig. 5.

When it is necessary to use the assembly, it is taken from its place of storage into the general area of use as, for example, a hospital emergency room, outpatient clinic, operating room, nursing station, patient room, physician's office, field hospital, or other medical/veterinarian application.

The device of the present invention is free standing and can be conveniently placed anywhere in the sterile field being used for this procedure. When ready for use, packaging band 12 is removed. The protective tip 13 is then removed from the nozzle and the irrigation process is effected by applying hand pressure to the walls of solution chamber 10. The sterile irrigation solution (a distilled water or a USP saline solution) passes from the chamber 10, through nozzle 14 to the wound area. When solution flow is stopped, the air reentering chamber 10 may be further protected from contamination by employing optional filter 15. Filter 15 is located between the end of nozzle 14 at the inlet into solution chamber 10. Filter 15 is a diaphragm-type valve. For example, one embodiment is a Mitral filter valve, which is a diaphragm of filter medium that expands under internal pressure to create an orifice and collapses back into place with the release of internal pressure. Another embodiment is a Clapper Filter, which is filter medium assembled to a one-directional clapper valve frame. Both filter types operate on the same basis. When pressure is applied from inside, filter 15 opens to allow passage of fluid from chamber 10 through delivery nozzle 14 and tip 13 to the wound. When inside pressure is released the returning air to chamber 10 returns filter 15 to its original position, thereby allowing the filtration of the returning air to chamber 10. This filtration minimizes the contamination of the remaining irrigation solution during necessary interruptions in the irrigation treatment. Since the entire assembly can be placed in an upright, free standing, position, nozzle 14 is prevented from possible contact with contaminated areas, allowing for safer interruptions of the wound care procedure. When irrigation solution 11 is depleted, the empty device may be discarded in its entirety, in any common waste receptacle. No Sharps Hazard Disposal requirements apply to the device of the present invention.